# EXPERIMENTS IN ART AND TECHNOLOGY
## A Brief History and Summary of Major Projects
## 1966 - 1998

Experiments In Art And Technology
69 Appletree Row
Berkeley Heights, NJ 07922

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MAINTAIN A CONSTRUCTIVE CLIMATE FOR THE RECOGNITION OF THE NEW TECHNOLOGY AND THE ARTS BY A CIVILIZED COLLABORATION BETWEEN GROUPS UNREALISTICALLY DEVELOPING IN ISOLATION. ELIMINATE THE SEPARATION OF THE INDIVIDUAL FROM TECHNOLOGICAL CHANGE AND EXPAND AND ENRICH TECHNOLOGY TO GIVE THE INDIVIDUAL VARIETY, PLEASURE AND AVENUES FOR EXPLORATION AND INVOLVEMENT IN CONTEMPORARY LIFE. ENCOURAGE INDUSTRIAL INITIATIVE IN GENERATING ORIGINAL FORETHOUGHT, INSTEAD OF A COMPROMISE IN AFTERMATH, AND PRECIPITATE A MUTUAL AGREEMENT IN ORDER TO AVOID THE WASTE OF A CULTURAL REVOLUTION.

# EXPERIMENTS IN ART AND TECHNOLOGY

## BRIEF DESCRIPTION OF E.A.T.

Experiments in Art and Technology was founded in 1966 by Billy Klüver, Robert Rauschenberg, Fred Waldhauer, and Robert Whitman. The decision to form the not-for-profit organization developed from the experience of "9 Evenings: Theatre and Engineering," held at the 69th Regiment Armory in New York City in October 1966 where forty engineers and ten contemporary artists worked together on the performances. It became clear that if continuing organic artist-engineer relationships were to be achieved, a major organized effort had to be made to set up the necessary physical and social conditions.

In November 1966, a meeting of artists was held in New York City, attended by 300 artists, engineers and other interested people. The reaction was positive to the idea of E.A.T. providing the artists with access to the technical world. Robert Rauschenberg became chairman, Billy Klüver president, Robert Whitman treasurer, and Fred Waldhauer secretary. Membership was opened to all artists and engineers, and an office set up in a loft at 9 East 16th Street in New York.

The purpose of the organization was formulated by Billy Klüver and Robert Rauschenberg:

-- Maintain a constructive climate for the recognition of the new technology and the arts by a civilized collaboration between groups unrealistically developing in isolation.
-- Eliminate the separation of the individual from Technological change and expand and enrich technology to give the individual variety, pleasure and avenues for exploration and involvement in contemporary life.
-- Encourage industrial initiative in generating original forethought, instead of a compromise in aftermath, and precipitate a mutual agreement in order to avoid the waste of a cultural revolution.

The founders of E.A.T. saw the organization acting as a catalyst to stimulate the involvement industry and technology, with the arts. E.A.T. worked to develop an effective collaborations between artists and engineers with industrial cooperation and sponsorship.

There was an immediate response to E.A.T. from artists and the art community. Due to the early activities of the organization in attracting engineers, by 1969 there were over 2,000 artist members and 2,000 engineer members willing to work with artists.

Expressions of interest, requests for technical assistance, etc. came from all over the United States and from abroad: Europe, Japan, South America, etc. People were encouraged to start E.A.T. Local Groups and about 15-20 were formed. In 1968 a conference for these Local Groups was held at the E.A.T. loft in Manhattan.

E.A.T.'s activities took two principal forms: Technical Services Program and E.A.T. Projects which the organization initiated and administered.

An ongoing Technical Services Program provided artists with access to new technology for their work by matching them with engineers or scientists for a one-to-one collaboration on the artist's specific project. A part of this effort was to acquaint the technical and business communities with the needs of the artists. E.A.T. was not committed to any one technology or type of equipment like computers or holography; E.A.T. never established a laboratory or workshop, preferring for the artist to work directly with engineers in the industrial envronment which was where the technology was being made. The Technical Services were open to all artists and no judgment was made about the esthetic value of the artist's project or idea. An effort was made to match every artist with an engineer or scientist who could help her/him.

The range of artists' interests was enormous, and this diversity is reflected in the letters, proposals and requests for technical help now in the archive. The geographic, technical, and artistic diversity of these contacts with E.A.T. uniquely document a vital and important moment in the history of post-war art, as well as the continuing involvement artists have had with new technology in the 20th century.

E.A.T. initiated and organized a variety of events and exhibitions: "9 Evenings: Theatre and Engineering" (1966); "Some More Beginnings" at the Brooklyn Museum (1968-1969); Pepsi Pavilion at Expo '70, Osaka Japan (1969-1970); and The New York Collection for Stockholm (1971-1973).

During the 1970s the emergence of new hardware technologies in communications, data processing, and control and command instrumentation led to new generation of software systems, which were of great interest to the artists. E.A.T. realized that artists could make a significant contribution to the evolution of these software systems and generated a series of projects in which the artist participated in these areas of technological development. E.A.T. undertook interdisciplinary projects that extended the artists' activities into new areas of society: Projects Outside Art (1969-1971); American Artists in India

(1970-1971); Telex: Q&A (1971); Children and Communication(1971); City Agriculture (1971); and numerous projects with artists and television in this country and abroad, of which the Anand Project in India (1969) is a prominent example.

E.A.T. PROJECTS INCLUDE:

9 EVENINGS: THEATRE AND ENGINEERING
A series of performances held in October 1966 at the 69th Regiment Armory in New York City, by John Cage, Lucinda Childs, Öyvind Fahlström, Alex Hay, Deborah Hay, Steve Paxton, Yvonne Rainer, Robert Rauschenberg, David Tudor, and Robert Whitman. They worked in collaboration with more than 40 engineers and scientists from Bell Telephone Laboratories to develop technical equipment that was used as an integral part of the performances. A catalogue was printed containing statments by the participating artists, photographs, drawings and technical diagrams. A 20 minute, 16mm sound, black and white film was made of the performances.

TECHNICAL SERVICES PROGRAM 1966 TO PRESENT
The Technical Services program began in 1966. Artists with technical requests were matched with engineers and scientists for information, assistance or longer collaborations. The system for providing information and matchings was expanded several times since 1966, including the development of the artist-engineer matching system, first using edge-notch cards to hold information on technical specialties of over 1,000 engineers as well as the initial development of a computer database of engineers and scientists for artists' reference.

An initial effort of E.A.T. was to recruit engineers to work with artists. Activities intended to interest and recruit engineers included visits to technical laboratories like Bell Laboratories in Murray Hill, NJ or IBM Laboratories in Armonk, NY; taking a booth at the in IEEE convention in New York where artists talked to engineers; weekly open houses at the E.A.T. loft at 9 East 16th Street, where artists and engineers could meet and talk informally; publication of a newsletter,E.A.T. News; compilation of a list of technical libraries in the New York City area open to artists. Other services to artists included loan of equipment, consultation on safety of works, and approaches to industry for support of artists' projects. There is documentation on all these activities.

One typical project that E.A.T. undertook under the Technical Services Program was to secure permission for the public

exhibition of an art work employing lasers. Such permission had been denied to a work by Kieji Usami in November 1968. Peter Poole of the E.A.T. staff worked successfully with the New York City Health Department to obtain permission to show the work at the Jewish Museum. E.A.T. published an account of the installation and process of obtaining health department approval for a laser environment was written by Peter Poole.

LECTURE SERIES BY ENGINEERS AND SCIENTISTS FOR ARTISTS
In the spring of 1968, E.A.T. organized a series of lectures by engineers and scientists for artists held at the E.A.T. loft. on technical subjects like lasers and holography; computer generated sound and images; television; new Hexcel materials. Speakers came from academic, industrial and government laboratories: Bell Laboratories, MIT, National Bureau of Standards, etc.

E.A.T.COMPETITION
In the spring of 1968 E.A.T. announced a competition for the best contribution by an engineer to a work of art made in collaboration with an artist, and called for works incorporating technology to be selected for an exhibition organized by Pontus Hulten "The Machine as Seen at the End of the Mechanical Age" to be held at the Museum of Modern Art in New York in the fall of 1968. E.A.T. offered to match all interested engineers and artists.

SOME MORE BEGINNINGS: EXPERIMENTS IN ART AND TECHNOLOGY
"Some More Beginnings" was one of the first major art and technology exhibitions. It was held at the Brooklyn Museum from November 1968 to January 1969. The competition had generated more than 140 submissions and the decision was made to show all these works at the Brooklyn Museum. The catalogue was designed by Billy Klüver, Julie Martin, and Robert Rauschenberg and contains photographs and technical description of 145 works.

PEPSI-COLA PAVILION AT EXPO '70, OSAKA, JAPAN.
E.A.T. organized and administered a large-scale international collaboration to design, build and program the Peps-Cola Pavilion at Expo '70, Osaka Japan. It was initiated in October 1969 by four core artists: Robert Breer, Forrest Myers, David Tudor, and Robert Whitman. As the design of the Pavilion developed, engineers and other artists were added to the project and given responsibility to develop specific elements. All in all twenty artists and fifty engineers and scientists contributed to the design of the Pavilion. Also 34 Japanese and American artists were invited to design performances for the Live Programming of the space. The Pavilion opened March 1970.

A book <u>Pavilion</u> ed. by Billy Klüver, Julie Martin, and Barbara

Rose was published by E.P. Dutton in 1972 and contains essays by Elsa Garmire, Billy Klüver, Nilo Lindgren, Fujiko Nakaya, Barbara Rose, and Calvin Tomkins and all the artists proposals for the Live Programming of the Pavilion. It also includes photographs by Shunk and Kender.

In the late 1960s the growth of new generations of software systems brought about by the new hardware technology in communications, data processing, and control and command instrumentation were of great interest to the artist. E.A.T. realized that artists' use of such systems could make a significant contribution to these systems' future evolution. E.A.T. generated a series of projects which developed means for the artist to participate in these areas of technological development and expanded the role of the artist in shaping these systems. These projects included:

THE ANAND PROJECT
In October 1969, the Nehru Foundation for Development and E.A.T. assembled a group of Indians and Americans with specialities related to instruction and television and included artists and engineers. The group met in India during December 1969 and developed a proposal for local input into the development of instructional software for television. The project was centered in the rural villagers in the Anand Dairy Cooperative and concentrated on information and instruction for the women who raise and tend the milk-producing buffalo. The proposals for using 1/2 inch video cameras to make visual research notes as the basis for final programs have been adopted and widely used during the SITE television satellite project.

AMERICAN ARTISTS IN INDIA
E.A.T. initiated a project in 1970-1971 funded by the JDR 3rd Fund for American artists to travel and work for a month in India. The following artists participated: Jared Bark, Trisha Brown, Lowell Cross, Jeffrey Lew, Steve Paxton, Yvonne Rainer, Kate Redicker, Terry Riley, LaMonte Young, and Marian Zazella. They recorded their experiences with film, tapes, journals and still photographs. Interviews were carried out on their return.

PROJECTS OUTSIDE ART: ROOFTOP GARDENING
In collaboration with the Environmental Research Laboratory of the University of Arizona and Automation House, a closed-environment nutrient-feeding vegetable greenhouse was designed for the roof of Automation House. E.A.T. also carried out a feasibility study for a greenhouse for the roof of the artists' housing complex, Westbeth; and developed a proposal for an experimental greenhouse in the interior courtyard of the U.N.

International School in New York.

CHILDREN AND COMMUNICATION
Working with educational specialists from New York University, two environments, designed by Robert Whitman, were set up at 9 East 16 Street and 49 East 68th Street. They were linked by 14 dedicated telephone lines; and terminal equipment included Xerox and Magnavox facsimile machines, electro-writers, telex and telephones. From February through May 1971, more than 500 children, ages 6-13, visited the two locations and used the equipment to communicate with each other.

MULTI-DIMENSIONAL SCALING
In cooperation with psychologists at Bell Laboratories, several research studies using multi-dimensional scaling techniques developed at Bell Laboratories were carried out. One of them was to correlate national problems with technical and scientific resources applicable to these areas; another was a cross-cultural study of object words, which were chosen by artists in different countries.

TELEX Q&A
This project was organized in conjunction with an exhibition "Utopia & Visions 1871 - 1981" held at Moderna Museet. During August 1971, telex terminals were established at Automation House, New York; Moderna Museet, Stockholm; The Design Institute, Ahmedabad, India; Sony Building, Tokyo. The public in all four countries was invited to submit question about 1981 to the other countries. Scientists, artists, subject experts, students, and members of the general public were asked to formulate answers which were then telexed to the originator. Over 400 questions were sent and answered during the month.

ARTISTS AND TELEVISION
In the winter of 1971 E.A.T.organized the cablecast of artists' videotapes over the newly opened cable television channels in New York City.

RECORDING OF INDIGENOUS CULTURE IN EL SALVADOR
In January 1972 E.A.T., at the request of the Division of Culture of The Ministry of Education in El Salvador, conducted a feasibility study on mobile broadcast television production equipment and formulated a plan for producing cultural programming on educational channels.

NEW YORK COLLECTION FOR STOCKHOLM
Beginning in January 1971, E..A.T. undertook a large-scale effort to assemble a major collection of 30 works by New York Artists of the 1960s and to raise funds for the purchase of the collection

to be donated to Moderna Museet, Stockholm. Thirty artists donated prints to a portfolio to support the project. The collection opened at Moderna Museet in October 1973 with 105 American guests attending the opening.

ISLAND EYE ISLAND EAR
David Tudor has conceived a collaborative project/concert to be held on an island, which will both utilize and reveal the nature of the island. Parabolic antennas will be placed in configurations around the island to create sound beams and sound reflections. The sound input will be sounds of the island recorded over the course of one year. Fujiko Nakaya will install cloud sculptures and Jacqueline Matisse will fly the kites she designs. Extensive tests were made on a Island Knavelskär in the Swedish archipelago and later Bluff Island in the Adirondacks in New York state were researched as possible sites for the concert.

LARGE SCREEN OUTDOOR TELEVISION SYSTEM
Billy Klüver initiated and supervised the design and feasibility study for a large screen outdoor television system for the Plaza of Centre Georges Pompidou, Paris, 1976-1977.

OPAL LOOP
E.A.T. supervised the testing and installation of a Cloud Sculpture by Fujiko Nakaya as a set for the dance Opal Loop, for Trisha Brown Dance Company, first performed at 55 Crosby Street, June 10, 1980, and performed later that year at The Brooklyn Academy of Music.

ASTRAL CONVERTIBLE
This was a collaboration between Billy Klüver, Per Biorn and Robert Rauschenberg for an interactive set for the dance Astral Convertible for Trisha Brown Dance Company. The idea was for a set that could provide light and sound for the dance in any environment, in particular outdoor environments, and would be interactive with the dancers. The first performance was held June 22, 1989, in Montpellier France.

OCEAN
In the spring of 1994 E.A.T. developed a research effort to locate and collect sounds from the oceans all over the world to be used by the composer David Tudor in an electronic composition that was to be part of John Cage's last work for the Merce Cunningham Dance Company, Ocean. Material was collected from such sources as private, university and government marine biology laboratories, as well as from the archives of companies that work with ocean oil exploration The work premiered in Brussels May 18, 1994.

GREENLAND GLACIAL STONE PROJECT
E.A.T. organized and administered an project for the artist Fujiko Nakaya, an environmental artist who works with pure-water fog to create sculptures and installations in natural settings. From June 25 to July 12, 1994, Fujiko Nakaya, accompanied by members of E.A.T. staff, traveled to Greenland to collect 60 tons of ancient glacial moraine stones from the Thule-Qaanaaq area in North West Greenland for a Glacial Stone Fog Garden. The garden which incorporates the stones and a fog sculpture will be in the courtyard of a museum in Kaga City, Japan, that will honor her father, Dr. Uchikiro Nakaya, a world renown snow scientist, who discovered the phases of snow crystal growth and made the first scientific photographic studies of snow crystals. A pioneer in low-temperature physics, Dr. Nakaya spent summers in North West Greenland working with ice-core samples from the glaciers to study the viscoelastic properties of snow and ice. The museum building was designed by the architect, Arata Isozaki.

9 EVENINGS FILM PRESERVATION PROJECT
E.A.T. has initiated a project to preserve and edit more than 400 minutes of 16mm and 35 mm color and black and white film footage shot in 1966 at 9 EVENINGS: THEATRE AND ENGINEERING to document all ten artists' performances from that event. Swedish filmmaker, Barbro Schultz Lundestam will edit all ten films on video. The first film to be completed was Kisses Sweeter Than Wine by Öyvind Fahlström, which had its premiere in September 1996, the second was Robert Rauschenberg's Open Score, which had its premiere in conjunction with Rauschenberg's retrospective exhibition at the Guggenheim Museum in September 1997. The next film to be made will be of John Cage's performance, Variations VII.

E.A.T. ARTISTS EDITING FACILITY
In January 1998, E.A.T. established an Avid editing facility in Berkeley Heights, New Jersey, which is available to artists and non-profit organizations for video projects. Equipped with The facility has Avid MCXpress with 75 AVR running on a Macintosh Power PC with up to with 36 gigabyte hard drive memory.
Sue Wrbican, an experienced Avid editor works with artists who need editing assistance.

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# E.A.T. NEWS

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Experiments in Art and Technology, Inc. 9 East 16th Street, N.Y., N.Y. 10003

The purpose of Experiments in Art and Technology, Inc. is to catalyze the inevitable active involvement of industry, technology, and the arts. E.A.T. has assumed the responsibility of developing an effective collaborative relationship between artists and engineers.

E.A.T. will guide the artist in achieving new art through new technology and work for the professional recognition of the engineer's technical contribution within the engineering community.

Engineers are becoming aware of their crucial role in changing the human environment. Engineers who have become involved with artist's projects have perceived how the artist's insight can influence his directions and give human scale to his work. The artist in turn desires to create within the technological world in order to satisfy the traditional involvement of the artist with the revelant forces shaping society. The collaboration of artist and engineer emerges as a revolutionary contemporary sociological process.

Initially, a successful working relationship between artists and engineers will require that each operate freely within his own environment. The function of E.A.T. is to create an intersection of these environments.

To ensure a continued fruitful interaction between a rapidly advancing technology and the arts, E.A.T. will work for a high standard of technical innovation in collaborative projects.

E.A.T. is founded on the strong belief that an industrially sponsored, effective working relationship between artists and engineers will lead to new possibilities which will benefit society as a whole.

Billy Klüver Robert Rauschenberg

Smith, Earle C., Pres., E.C. Smith Assoc., 60 East 42, N.Y.10017 682-6890

lasers, holography, fiber optics

Davis, Fred, 35 Highland Ave, Northport, N.Y. 11768
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